September 1943

SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

ITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

Contents

SOIL CONSERVATION is issued monthly by SOIL CONSERVATION SERVICE of the United States Department of Agriculture, Washington, D. C. The matter contained herein is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with the approval of the Director of the Budget. SOIL CONSERVATION seeks to supply to workers of the Department of Agriculture engaged in soil conservation activities, information of special help to them in the performance of their duties. Copies may also be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., 10 cents a copy, or by subscription at the rate of $1.00 per year, domestic; $1.50 per year, foreign. Postage stamps will not be accepted in payment.

WELLINGTON BRINK
EDITOR

SOIL CONSERVATION

CLAUDE R. WICKARD
SECRETARY OF AGRICULTURE

HUGH H. BENNETT
CHIEF, SOIL CONSERVATION SERVICE

VOL. IX • NO. 2 ISSUED MONTHLY BY THE SOIL CONSERVATION SERVICE, DEPARTMENT OF AGRICULTURE, WASHINGTON AUGUST • 1943

Oats and vetch mixture, seeded in cotton middles after the first picking of cotton, in Gibson County, Tenn. Here is excellent fall and winter grazing that can be utilized without damage to the subsequent grain crop.

PASTURING FALL PLANTED GRAINS

By C. R. ENLOW

LIVESTOCK NUMBERS are at an all-time high. This seems quite logical because the demand for livestock products is tremendous. We must keep our men at the front supplied with meat, cheese, and other products. We must ship large quantities to our allies and at the same time provide sufficient food so that we ourselves can do our best in helping to win the war.

Perhaps never before has there been such keen interest in the condition of the growing crops. When one recalls that our reserve supplies of grain are dwindling, concentrates are scarce, and that there is little or no hay in sight except the growing crop, it is not surprising that we are all concerned about the condition of crops. Pasture, likewise, has suffered because of the expansion in the acreage of corn, soybeans, hemp, flax, and other crops, considerable of which has come through plowing up pasture.

WHAT can we do at this time to avert possible feed shortages? Certainly we cannot sit back and hope everything works out as it should. This is the type of attitude that will most certainly bring success to the Axis.

EDITOR'S NOTE.—The author is Chief, Agronomy Division, Soil Conservation Service, Washington, D. C.

We all realize that the feared shortage of grass and legume seed is rapidly materializing into an actuality and we must use our efforts to encourage farmers to seed an extensive acreage of winter cover crops in order to provide needed seed supplies and also additional fall, winter, and spring grazing. Certainly the supply of winter legume seeds will not go very far. If you figure the seed-production prospects for this year, including a large carry-over from last fall which arrived in the South too late for planting, there are approximately 327,000,000 pounds of Austrian winter peas, vetches, rye grass, and crimson clover in sight. But at that, it would not be enough seed to plant the cropland in the States of Alabama and Georgia.

Fall grains—rye, wheat, barley, and oats—play a bigger part in the conservation and food-production program than most of us realize. A tremendous acreage is seeded each fall. Most of the seedings are made with the idea of harvesting a grain crop next summer. More thought should be given to utilizing the seedings for fall and winter grazing—and to seeding additional acreages primarily for the purpose of grazing. It is the purpose of this article to urge that all possible emphasis be placed on seeding fall grain, not necessarily for grain production, but to insure more livestock feed in the form of pasture and at the same time protect exposed soil from erosion.

In the Winter Wheat Belt it is quite customary to graze wheat in the fall and winter with livestock, provided it makes sufficient growth to justify grazing. Unless it is overgrazed, no reduction in grain yield is to be expected the following summer. Quite frequently 6 weeks' to 2 months' grazing can be obtained in the fall and early winter, and with ideal conditions considerable grazing is obtained through the winter months. It has been found, however, that spring grazing is liable to reduce grain yields rather seriously, and during the spring months livestock should be kept off grain that is to be harvested.

Recognition of the value of wheat, barley, oats, and rye for grazing is universal. In building up pasture calendars for year-around grazing, considerable reliance is placed on the cereals throughout the country. There are a few of the State experiment stations that have made a study of the grazing possibilities of fall-planted grain. Texas, for instance, has done considerable work and found it is possible by utilizing winter grain along with native pasture and Sudan grass to get year-around grazing. Lately the Texas station has been studying the forage production of different varieties of winter grains by frequent mowing, and is finding a tremendous difference in the production of different varieties. So much so, in fact, that it is evident from the standpoint of the use of cereals for grazing for increased production of livestock products that similar studies should be conducted in other sections of the country.

Connecticut points out that barley or oats can be seeded in late July or August and pastured from September to November 15, thereby getting from 75 to 100 days of grazing. New Jersey recommends barley as a pasture crop for either fall or spring grazing, planting it a few weeks earlier in the fall in order to get additional growth.

Tennessee advocates winter grains for grazing, and both the middle and west Tennessee experiment stations have carried on limited experimental work. At the middle Tennessee station, calves grazed rye for 156 days and gained 122 pounds each. At the same station, sheep grazed barley pasture during the winter and spring for 165 days. In North Carolina, barley seeded around August 25 furnished 81 cow-days' grazing per acre as an average for 3 years, and yet the barley produced 34 bushels of grain per acre. Other States have experimented with winter grains for pasture, and have published information concerning their use for this purpose.

Missouri has for many years been carrying on a 1-year rotation of lespedeza and winter grain as a basis of her livestock program. In 1941 there were 105,066 farms growing lespedeza in Missouri. Forty-two percent of these farms were regularly using the annual rotation of small grain and lespedeza. It is not possible to assume that all of the winter grain is grazed, but certainly much of it is. A very profitable return can be obtained by fall and winter grazing without reducing the yield of grain. In the case of many livestock farms, the grain is grazed in the spring until the lespedeza takes over. The type of management depends on the type of farming that is carried on and the needs of the particular farmers.

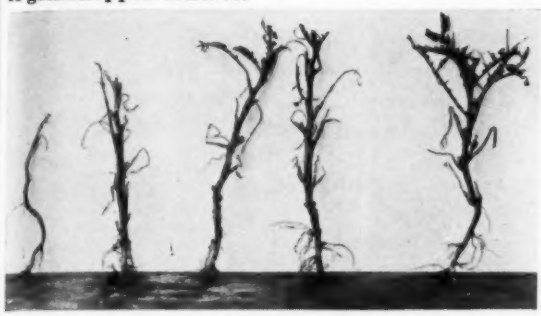
This summer and fall there will be tremendous acreage of corn, soybeans, cotton, peanuts, hemp, flax, potatoes, lespedeza, and other crops harvested. Undoubtedly a great deal of this land will be seeded to fall grain and farmers will have plans for the use of the remainder next year for other crops. Not much effort needs be expended in case of the planned seeding except perhaps to encourage farmers to seed sufficiently early to get enough fall growth for grazing; at the same time, however, it is important to follow State recommendations concerning time of seeding, in order to prevent an infestation of Hessian fly or other insects and diseases. Acres that would otherwise remain bare all winter, however, should be seeded, and this is where we can devote

(Continued on page 68)

TILLAGE FOR GRASSHOPPER CONTROL

By GERALD B. SPAWN and M. S. McMURTREY

PERHAPS THE GREATEST threats to food production in large areas of the Northern Great Plains, aside from possible moisture shortages, are grasshoppers and wind erosion. Experiences thus far have indicated that subsurface tillage, which has succeeded in controlling wind erosion in those areas, also will give a reasonable degree of grasshopper control.



This is what happens to potato plants.

THESE TRENDS are revealed in an experiment which was begun in the fall of 1939 by the Entomology Section of the South Dakota Agricultural Experiment Station in cooperation with the Soil Conservation Service, the senior author being in charge of the project.

The grasshopper plague is not new and efforts to control it have been sought for years. Reports of more than three-quarters of a century ago told of frequent locust plagues. The one in 1874 was considered the worst, although in terms of dollars and cents the damage was probably less than the more recent infestations. This is because of the growth in population and increase of cash-crop production.

Now, however, the farmers are confronted with grasshopper control, not only from the standpoint of protecting their own interests, but also to help produce food for war. Grasshopper control is a patriotic necessity for every farmer, because the grasshoppers are a serious saboteur to the Nation's war work. There are very few, if any, crops not endangered by them. The pictures showing several of our essential war crops bear silent testimony to the seriousness of ravage by hungry hordes of grasshoppers whose appetites seem never to be satisfied.

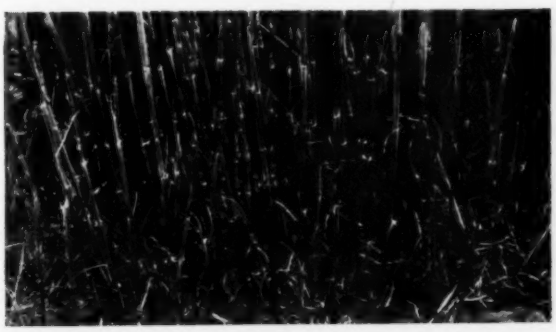
The emphasis being given to conservation of the soil has brought about the realization that grasshoppers

Damage to corn.

are far more than just a serious menace to growing vegetation. In areas where grasshoppers appear in outbreak numbers they are, through the destruction of growing plants, very definitely one of the major hazards of the soil itself.

Without cover, the soil of the Great Plains is subject to devastating erosion by wind. Drought, improper tillage, cropping practices not in accord with the capabilities of the land, and grasshoppers are the most important factors causing lack of cover.

Many fields, particularly corn, have been completely denuded of vegetative cover as a result of grasshopper invasions. Small grain fields, especially if planted late in the spring or of a late maturing variety, have suffered similar fates although usually not to the extent of complete removal of cover. Grasshoppers also attack grass, thereby thwarting attempts to regrass badly blown areas and seriously damaged ranges. Thus, grasshoppers are recognized as one of the major obstacles to successful farming, soil conservation, and range and pasture management.



Barley defoliated by 'hoppers, mostly nymphs. In the end, few stalks are left and the field becomes a mat of Russian thistles.

EDITOR'S NOTE.—The authors are the Assistant Station Entomologist, South Dakota Agricultural Experiment Station, Entomology Section, Brookings, S. Dak., and the Chief, Regional Biology Division, Soil Conservation Service, Lincoln, Nebr., respectively.

Grasshoppers remove leaves before starting on stalks.

Cooperation in control measures is essential because under certain conditions, grasshoppers will move from one farm to another. However, this important fact remains: The damage should be decreased for an individual farmer in proportion to the reduction of grasshoppers on his own land. This statement will hold true insofar as the grasshoppers that do the damage to small grain crops are usually locally produced from the margins or headlands and the edge of the field in a strip some 150 feet wide. The width of the grasshopper-producing strip around the edge of a field may vary considerably. In the case of the lesser migratory locust the eggs may be deposited over the entire field. As a rule, by the time grasshoppers start to migrate or drift by flight into other areas the small grain crop has been harvested.

Certain tillage practices used by farmers, if done at the right time, comprise one of the most important means of reducing grasshopper populations. These practices should be followed up the next spring by careful surveys of the fields at the time the young are hatching, for it may be necessary to follow the tillage practices by the timely use of poison bait in order to obtain the best results.

Tillage methods bring about destruction of the eggs in several ways. One of the principal objectives in the use of tillage for grasshopper control is the stirring up of the surface 2-inch layer of soil (that in which the eggs are deposited) so that the egg pods will be broken and the eggs exposed. This will allow the eggs to dry out to such an extent that they ordinarily will not hatch. Such treatment also makes the eggs more readily available to predators (other insects, mites, rodents, birds, etc.). The tillage operation alone causes a certain amount of actual mechanical destruction of the eggs.

Fall tillage is recommended in preference to spring tillage, so that parasites, rodents, birds, weather, etc., are given a longer period of time to complete the destruction of a large percentage of the eggs. Leaving the eggs in the disturbed soil to pass through the critical winter season will alone decrease the hatchability of a large number of egg pods. It facilitates the drying out of egg pods, and also makes them subject to the effects of alternately freezing and thawing temperatures. Where crops or weather conditions prevent fall tillage, spring tillage for control of local grasshoppers is recommended. Deep plowing (moldboard) is a good method to use where it is accompanied by proper safeguards for protection against soil loss by wind or water erosion. Deep plowing serves to bury the eggs to such a depth that hatching, if it occurs at all, is greatly delayed, and most of the hoppers that do hatch die before reaching the surface.

RESULTS OF EXPERIMENTAL TESTS

The South Dakota Station tillage project for grasshopper control was started in the fall of 1939. The results presented in the following charts are based upon tillage tests conducted over a period of 3 years. Tests are still being conducted and final tabulations may present conclusions somewhat different from those given below.

In some cases certain practices, which were not practical for use in the immediate areas in question or for which implements were unavailable until recently, were given but a single test. These are indicated in the tables as tests for 1 year only.

EXPERIMENTS IN THE WINNER-RELIANCE AREA

SOIL TYPE—CLAY LOAM

[Fall tillage—Field conditions]

Tillage method:	*Average percentage control*
Moldboard plowing	83.50
Double disking	74.10
Single disking	58.76
1-way disking (wheat land plow)	54.76
Subsurface cultivation (straight blade type)	50.00
Subsurface cultivation (small sweep type or duckfoot)	46.45
Regular listing	40.24
Cut-away disk treatment	35.25

EXPERIMENTS IN THE HECLA AREA

SOIL TYPES—VALENTINE SAND AND SANDY LOAM

[Fall tillage—Field conditions]

Tillage method:	*Average percentage control*
Regular listing (1 year only)	[1] 100.00
Moldboard	94.15
Tandem disking	93.80
1-way disking, plus drilling (1 year only)	93.11
Subsurface cultivation (wide sweep type—1 year only)	90.52
1-way disking (wheat land plow)	86.28
Subsurface cultivation (small sweep type or duckfoot)	81.64
Plowing with moldboard removed	74.01
Double disking (1 year only)	54.44
Single disking	39.34
Subsurface cultivation (straight blade type)	No control

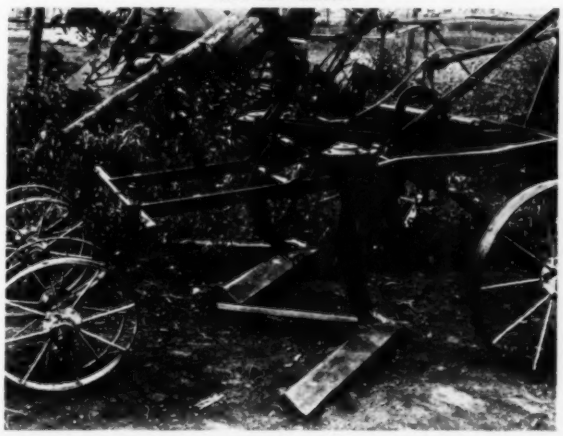
[1] Additional tests would no doubt lower this average.

In addition to destruction of eggs there is still another way in which tillage can be used to advantage. This involves the use of tillage implements to concentrate egg deposition in areas in which the eggs may later be destroyed.

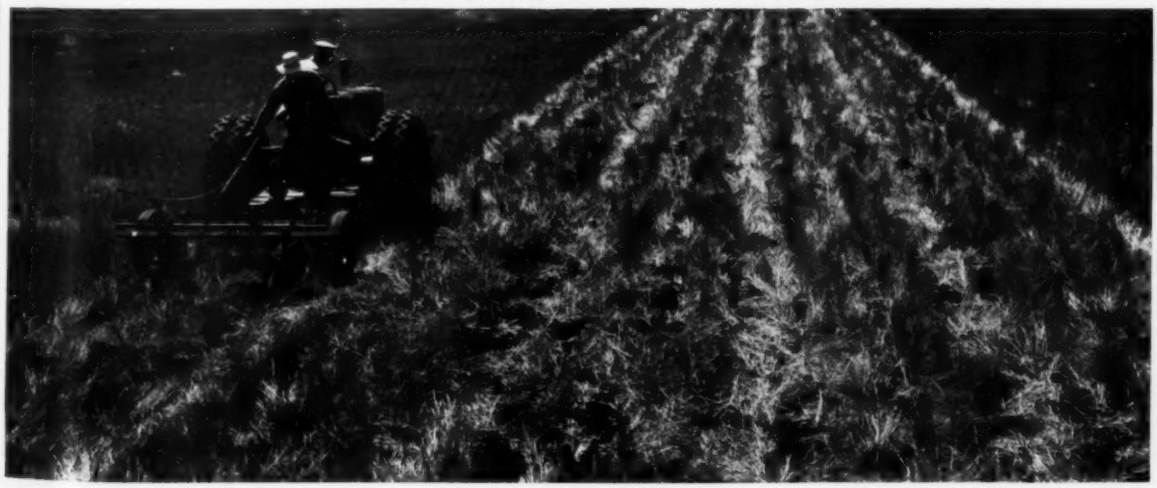
Tests have indicated that subsurface cultivation and other types of treatment used as soon as possible after harvest, and before the grasshoppers start to lay their eggs, will make unfavorable areas for egg laying. The grasshoppers will avoid these areas and will then concentrate their eggs in the adjacent favorable untilled areas. The latter may then be treated after egg-laying has been completed. In this kind of a control procedure, it is best to leave untilled strips in the field (strips 15 to 20 feet wide) at intervals of about every 20 rods, where the eggs will be deposited. Subsurface tillage soon after harvest is also recommended for weed control as a moisture conservation measure.

This method of forcing concentration of eggs actually has been used to advantage. For example, in one instance, 162 soil samples of one-half square foot each were taken from an untreated strip in a barley stubble where the remainder of the field had been treated by means of a duckfoot cultivator immediately after harvest. These samples showed an average of 3.31 grasshopper egg pods per square foot for the untreated areas. Twenty-eight such samples taken from the duckfoot treated area showed only 0.2 of an egg pod per square foot.

Subsurface tillage machine, made by attaching sweeps to two-row lister.



Subsurface tillage being accomplished with a three-sweep implement.



Below are five suggestions for meeting the grasshopper menace. If they are followed, reasonably effective control will result:

1. Plan in advance for control. Use tillage following harvest to create unfavorable egg-laying conditions in fields. Leave strips 15 to 20 feet wide, every 15 to 20 rods in the field to function as egg concentration areas. These should be tillage treated when grasshopper egg-laying has been completed, late in the fall.

2. Should it be necessary to use spring tillage, the tillage operation should be performed as early as possible with special attention being given to the outer edges of fields and to headlands.

3. Surface and subsurface cultivation methods are good in that they disturb the surface, egg-containing layer of soil. Deep plowing is also effective but cannot be recommended for areas where wind erosion is prevalent.

4. In case of heavy egg infestation in alfalfa fields, use the spring-tooth harrow late in the fall or early in spring to destroy egg pods.

5. Fields should be examined in the fall to determine the amount of grasshopper egg deposition. Inexpensive egg screens may be constructed from 1 by 4 boards and ¼-inch mesh hardware cloth. Soil samples of approximately ½ square foot each and 2 inches in depth should be taken at intervals over the field and field margins. The screening of these individual samples gives a good estimate of the seriousness of the infestation. Should the grasshopper egg pod count run as high as one pod per square foot in the edge of the field, the infestation is sufficiently heavy to warrant the use of tillage as a control measure.

Using the one-way plow immediately after harvest to control weeds and conserve moisture. The surface mulch protects the soil from wind erosion and affords unfavorable conditions for the deposition of grasshopper eggs.

WAR BOND NOTE

The Land Acquisition Division, Washington, continued to lead all other offices of the Soil Conservation Service during the month of June in percentage of total pay roll allotted for the purchase of War bonds. The Division has received personal commendation from the Chief.

Because Soil Conservation Service employees are so well acquainted with the benefits of conservation, it is not altogether surprising to find this Service close to the top of the list of bureaus and agencies of the Department of Agriculture in percentage of total pay roll allotted for investment in War bonds.

Conservation of everything we have, and living simply and sparingly so as to put every dollar possible in War bonds, will materially hasten the day of victory and a return to the peaceful way of living.

—JOHN S. FICKLING

PRACTICE PROGRAM SPEEDS PLANNING

The program for widespread application of simple conservation practices during the off-crop season is showing definite returns in a speed-up in development of farm plans in Georgia, State Conservationist T. L. Asbury reports. During May, 718 complete district plans were developed and 5 farmers not living in districts cooperated in developing demonstration plans for their farms.

"In most cases," he adds, "these plans were made on farms where farmers had participated in the off-crop season work and, as a result, from 1 to 5 of the practices called for in the plan had already been established."

Gwen

DAD PREACHES CONSERVATION

By GWEN HUNSAKER

Dad

"When it comes to dry-land farming on sloping land, a curved line is the shortest distance to victory." THAT'S Dad doctrine and he's been preaching it, living it, and plowing it for 3 years now. On a census card or in the telephone directory, Dad's listed as Horace N. Hunsaker, Honeyville, Utah, but it's at our 300-acre dry farm in Whites Valley, 16 miles west of Tremonton, that he's been putting conservation farming to a test.

And, believe me, conservation practices have proved their value—and then some. Although Dad is thoroughly convinced of the soil benefits derived from conservation farming, he is also satisfied that this type of farming is essential in wartime because of its economy of labor and fuel.

EDITOR'S NOTE.—Miss Hunsaker is the daughter of a member of the board of supervisors, Northern Utah Soil Conservation District.

Facing a shortage of skilled farm labor, Dad was forced to find ways of doing the job in less time—and that's where contour farming comes in. By the old around-the-field method of plowing, he used to use a three-bottom moldboard plow, cutting a 3½-foot swath. Following the contour, the same tractor will pull an 8-foot wheatland plow at the same speed—a saving of over 56 percent in the time required to plow our farm.

And in these days of farm manpower shortages, gasoline rationing, and reduction in machinery manufacturing, it's a long step toward victory.

Not only does contour farming save labor, gasoline, and machinery, but we've learned on our farm that contour cultivation conserves moisture and precious fertile topsoil, both of paramount importance in producing high yields.

Contoured acres fight! On the Hunsaker property, strips of alfalfa, wheat, and summer fallow—all on contour—hold the soil, conserve the moisture, and boost the harvest. "Dad" Hunsaker and Melvin O. Hamilton, district conservationist at Tremonton, Utah, stand in the foreground.

543646—43——2

In 1939 and 1940, Dad plowed around the field and harrowed the ground. Both summers we had rains which caused quite severe run-off and washing of the topsoil. None of this run-off, however, came from the grassland above the field but started on the field itself. We lost a good deal of soil during those two summers. Little streams of water, starting on the upper part of our field, ran downhill and, in many places, took out soil as deep as a plow furrow and from a few inches to 4 or 5 feet in width.

In 1940, Dad signed an agreement with the Northern Utah Soil Conservation District to follow recommended conservation practices. He began by plowing on the contour that fall and finished the next spring with a wheatland plow and a modified moldboard. In the summer he abandoned the use of harrows and used only a rod weeder to destroy weeds.

During the summer of 1941, we had a very hard rain in June, bringing water even from the grassland above. Much to our surprise, however, the water was all absorbed in the contours and there was no washing at all. The rough stubble turned up by the wheatland and modified moldboard plows also helped to hold moisture and increased fertility by promoting faster decay of plant matter.

Another practice that Dad uses to prevent run-off is strip cropping. He's gradually working into a system of strip cropping, beginning at the top of the field with alternate strips of alfalfa, grain, and fallow. Over a long period of time, he expects to restore necessary nutrients to the soil with the alfalfa, but in the meantime he feels as if he's helping our Nation in a small way by producing feed for livestock.

Speaking of livestock reminds me of Dad's conservation practices on his three sections of range land. Now when somebody comes around who isn't quite convinced that range conservation really pays, Dad gets a gleam in his eye and delivers a lecture that goes about like this:

"I'll tell you, man, my range took an awful beating for 20 years or more—no denying that. I used to think the way to get more money—and, for that matter, the way to produce more—was to use a range as hard as possible. Why, I thought it was rank waste to let a few blades of grass go ungrazed.

"But I found out you can't keep grass fed off and expect it to keep coming back year after year. If you do, you throw nature out of balance. You've got to have some plant residue returned to the soil.

"It took me a long time to learn that, and some people still haven't learned it. That's where the Soil Conservation Service helps out. For the last 5 or 6 years I've been trying to build up my range. First, I cut my herd to about 60 to 70 cattle instead of the 150 I used to run. Then I built a stock watering tank under the AAA program and got better distribution of salt.

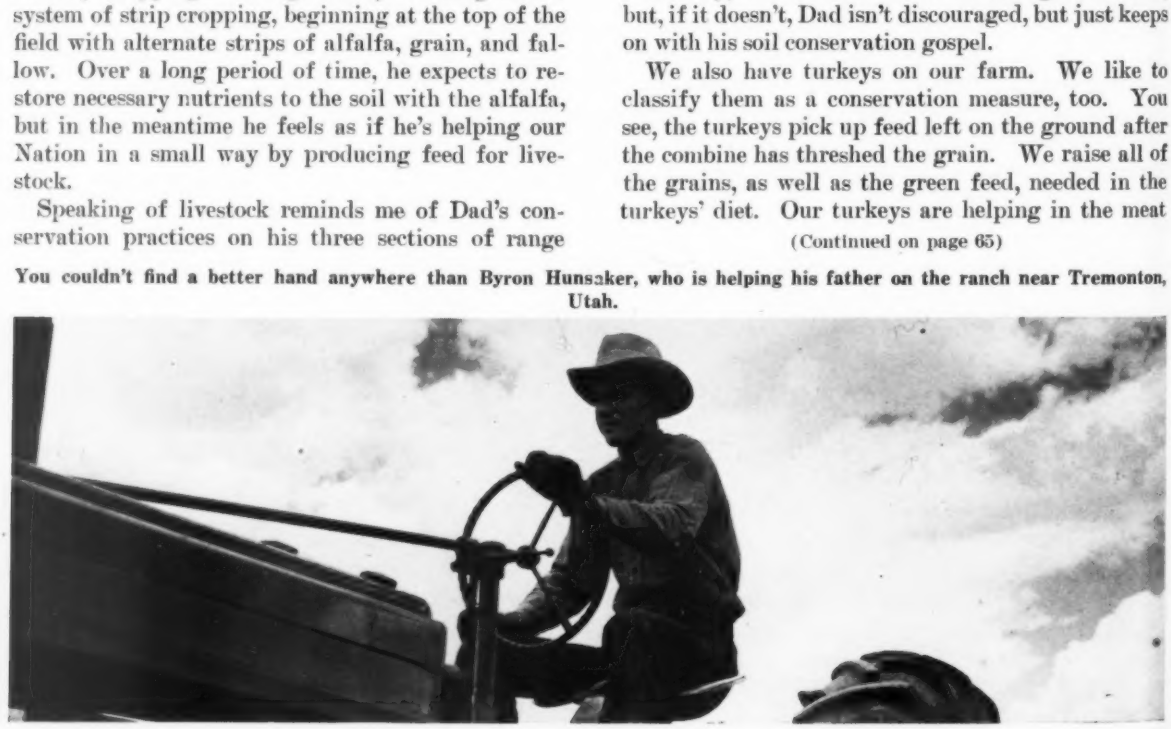
"You can see for yourself that the cattle are making better use of my range. And now, when we need more beef, I'm ready to produce it. This year I've increased my cattle 35 percent over last year—and I'm doing it without hurting my range a particle."

Usually, this convinces the doubting Thomases, but, if it doesn't, Dad isn't discouraged, but just keeps on with his soil conservation gospel.

We also have turkeys on our farm. We like to classify them as a conservation measure, too. You see, the turkeys pick up feed left on the ground after the combine has threshed the grain. We raise all of the grains, as well as the green feed, needed in the turkeys' diet. Our turkeys are helping in the meat

(Continued on page 65)

You couldn't find a better hand anywhere than Byron Hunsaker, who is helping his father on the ranch near Tremonton, Utah.



RECOGNITION ACCORDED OKLAHOMA FARMERS

By LEON J. McDONALD

BECAUSE THEY HAVE done an outstanding job of establishing conservation practices upon their farms and increasing production of war crops, 701 Oklahoma farmers received certificates of award from the Oklahoma Bankers Association during the past year.

CERTIFICATES were given—and will continue to be given—to landowners and operators having cooperative agreements with soil conservation districts, who have been certified by boards of district supervisors as eligible for such recognition. The supervisors base their recommendations on records of performance compiled by Soil Conservation Service technicians.

The attractive certificates, framed for hanging, are provided by the association, the cost being borne by local banks. The banks also pay the expenses of meetings at which recognition is extended. Already there have been held 32 meetings, representing 17 soil conservation districts. More than 5,000 people have attended.

The local banker takes the lead in sponsoring each meeting, collaborates closely with district supervisors, and invokes the cooperation of public schools, civic clubs, chambers of commerce, theaters, town halls, community centers, and farm organizations. Recognition for good jobs of conservation farming has been accorded to white and Negro farmers alike, at meetings held in the communities of each.

The program is very similar to that of a school or college commencement. Winners come forward, receive their certificates, and are congratulated by the banker and by the chairman of the board of district supervisors.

Sometimes the recipients of awards are invited to tell of their experiences with soil conservation practices. Twenty-nine of the meetings have been addressed by the president or the secretary of the Oklahoma Bankers' Association.

Eugene P. Gum, State secretary of the association and editor of the Oklahoma Banker, has been very generous in devoting space to encourage soil conservation districts in their war production job. Following is but one of a number of similar editorials that have appeared in the Oklahoma Banker:

EDITOR'S NOTE.—The author is Acting Chief, Regional Information Division, Soil Conservation Service, Fort Worth, Tex.

CONSERVATION FARMING IS A WAR WEAPON

A summary of information furnished us by farmers reveals that the establishment of conservation practices on their farms increased the value of the land 44 percent. The acre yield of corn was increased 37 percent, oats 27 percent, and cotton production showed an increase of 25 percent per acre.

Eroded, cultivated land planted to Bermuda grass showed an increased production of 64 percent and the use of conservation practices, such as mowing, controlled grazing, protecting from fire, and overseeding with clovers, increased the production of old pastures 80 percent.

This information indicates that the soil conservation district program is doing far more than conserving the soil. Such programs increase land values and are helping win the war through the application of conservation measures that increase production of needed war crops.

Gum gives much credit for the success of this project to a fellow banker, F. S. Hurd of Broken Arrow, Okla., who has been chairman of the agricultural committee 9 years. Hurd has been an advocate of soil conservation for many years and has served as chairman of the board of supervisors of the Arkansas-Verdigris Soil Conservation District since its organization in 1938. He has helped conduct seven meetings in the Arkansas-Verdigris Soil Conservation District to honor district cooperators who have done an outstanding job.

One of the best meetings was held in Tulsa, May 28, when more than 250 district supervisors, bankers, civic leaders, and farmers met in the Tulsa Chamber of Commerce banquet room. The meeting was jointly sponsored by the Tulsa Farm Club, the Tulsa bankers, and the supervisors of the Arkansas-Verdigris District. H. H. Bennett, Chief of the Soil Conservation Service, made the featured address.

The high point of the program was reached when Dr. Bennett himself was given a special certificate of award provided by the Oklahoma Bankers Association. The document bore the signature of Gov. Robert S. Kerr, of Oklahoma; Dr. Henry G. Bennett, president of Oklahoma A. & M. College and chairman of the State soil conservation committee; Nolan J. Fuqua, president of the State association of district supervisors; and L. C. Wright, president of the Oklahoma Bankers Association. In reality, it was a gift from all of Oklahoma—an expression of appreciation for able leadership of a tremendous undertaking. The presentation was made by Shawnee Brown, director of the Extension Service and vice chairman of the State soil conservation committee.

Governor Kerr expected to attend, of course, but an emergency called him to the National Capital. His telegram was read—

> Business for the State brings me to Washington today and am sorry that I cannot accept your invitation to address the group of distinguished men assembled in Tulsa today, as you requested me to do.
>
> I would like to personally do honor to the progressive farmers of eastern Oklahoma who will receive certificates of award from the Oklahoma Bankers Association for having met the requirements of the soil-conservation districts. By establishing the necessary practices they have proved themselves worthy of this recognition. They have not only conserved the moisture and increased the fertility but have saved this priceless topsoil for future generations. The encouragement Oklahoma bankers are lending to such a worthy cause cannot be commended too highly.
>
> To H. H. Bennett, Chief of the Nation's Soil Conservation Service; to Louis P. Merrill, regional conservator, S. C. S.; to Henry G. Bennett, chairman, State soil-conservation committee; to Nolan Fuqua, president, Oklahoma Soil Conservation District Supervisors Association; to L. C. Wright, president, Oklahoma Bankers Association; and to all who are interested in saving the soil, I send my heartfelt congratulations, and do hope that thousands of Oklahoma farmers will take advantage of your leadership to increase our food-for-freedom and preserve this priceless legacy.

The accomplishment of Mrs. Ethel E. Falconer and her two sons, one of whom is now in the Army, is an excellent example of the kind of work being recognized by the Oklahoma bankers and shows how the district program of treating the land according to its needs and adaptabilities is helping to win the war by increasing production. This family in 1937 suddenly inherited the sole responsibility of managing a hitherto unprofitable 240-acre farm. A cooperative agreement was signed with the supervisors of the east central Oklahoma soil-conservation district in June 1938.

The "before agreement" figures show 150 acres were being cropped: 47 acres of corn, 72 acres of oats, and 31 acres of cotton. Acre yields were low, cash receipts were small, and very little progress was being made in lifting the mortgage on the farm. Most of the ready cash was received from 5 dairy cows, 4 calves, 10 sheep, 4 sows, 29 pigs, and a small flock of poultry. Pastures were overgrazed and undeveloped. Stock water was inadequate. Very little protein forage or hay was being grown.

The "after agreement" figures revealed by a recent inventory show 80 acres of cultivated land protected by terraces, farmed on the contour, and improved through the use of a good crop rotation. A 30-acre meadow of sericea lespedeza provides an adequate supply of protein hay for the 60 head of Angus cattle accumulated during the past 5 years. One hundred and twenty acres of excellent Bermuda grass pasture have been established. Most of this Bermuda acreage was formerly cultivated land and produced low yields of cotton and corn. The pastures have been overseeded with Korean lespedeza, yellow hop, and white Dutch clovers to provide grazing 10 months of the year. Pasture management includes weed control, protection from burning, and controlled grazing.

Farm ponds have been constructed to provide an adequate supply of water for livestock. Each pond is fenced and water is piped to a trough located below the dam. Three trench silos have been built and a minimum of 1 year's feed supply is maintained at all times. Six brood sows and a large flock of poultry constitute an important part of this food-production factory. The Falconers are out of debt.

Hurd reports that the program of presenting certificates of award to deserving farmers has done more to inform bankers about the soil conservation district program than anything else. Work unit leaders say that farmers have been encouraged by this recognition. Those receiving the award feel a keen responsibility to make a good program better, and other district cooperators have been stimulated to complete the program on their farms. The meetings and attendant publicity have been instrumental in leading the public to appreciate the importance and value of a complete, coordinated program of proper land use.

Bankers and district supervisors have been pleased with the results obtained this year, and plans for the future include holding meetings in each district at least once a year to honor other district farmers who qualify. Follow-up meetings of groups previously honored have been held on the farm of one of the farmers who received a certificate. Whole families were included, well-filled lunch baskets were brought, and the event combined business with pleasure. They were conservation picnics. The host accompanied the men and boys on a tour of the farm to observe results of the practices established. Opportunity was given for discussion and swapping of experiences. Local banker, district supervisors, group leader, county agent, vocational teacher, and work unit leader were presented. The district supervisors believe this is a good way to increase the interest of all members of the family in the conservation program and to encourage farmers to do a better job of maintenance and soil improvement.

What do farmers think of these certificates of award?

A. H. McGrew, Broken Arrow, says, "My family and I are proud of the award. They put my photo in it and hung it in the front room for all to see. I'm behind the soil conservation district program 100 percent."

C. W. Wolcott, Coweta, sums it up this way, "It really makes farmers feel that their work is appreciated by others, who notice the improvement in their work and in the appearance of their homes."

Doctor Bennett receives a special certificate of award from Shawnee Brown, director of the Extension Service and vice chairman of the Oklahoma State Soil Conservation Committee. The certificate, reproduced at right, is of same general form but of different wording from that awarded outstanding farmers of the districts.


Certificate of Award

Hugh Hammond Bennett

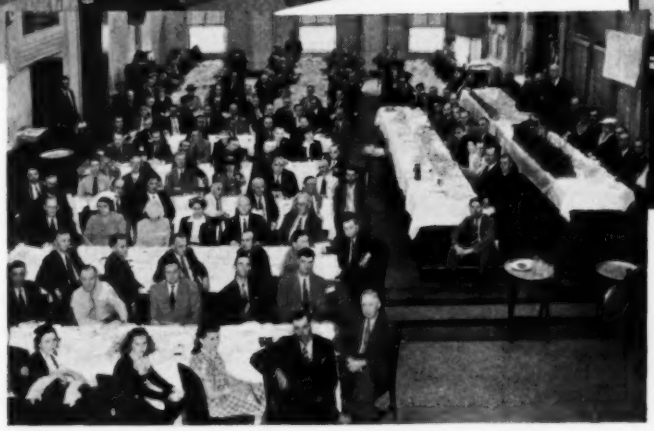
has devoted a lifetime to the conservation and use of soil. During that time he has seen man destroy much of the forests from the hills, the grass from the prairies, and with his plow lay bare the priceless soil to the wrath of driving winds and torrential rains. This conservationist has sounded the warning that erosion can undermine the basic structure of the nation and that a productive soil is the primary source of all food and fibre. He has been instrumental in leading the nation to accept conservation as a weapon of war and a necessity in time of peace.

This testimonial of honor is presented in recognition of his unfailing leadership as Chief of the Soil Conservation Service of the United States Department of Agriculture and his untiring efforts in the conservation of the nation's soil resources. This leadership is reflected by almost one thousand organized soil conservation districts located in forty-two states of the nation. Multiplied thousands of farmers in these districts have instituted a program of treating the land in accordance with its needs and adaptabilities.

Conservation Farming Increases Production

Given at Tulsa, Oklahoma, this twenty-eighth day of May, nineteen hundred and forty-three.

Hugh L. Harrell, president of the Oklahoma Bankers Association, signs some of the 701 certificates of award that have already been presented to conservation farmers of the State. Eugene P. Gum (standing) is in his twenty-seventh year as secretary of the Association.



"Graduates" were guests of the Tulsa Farm Club and the Oklahoma Bankers Association at a banquet in the dining room of the Tulsa Chamber of Commerce. The Chief of the Soil Conservation Service, at the extreme right, made the principal address.

BUILD SOIL

(From the Preface of a Forthcoming Book, "Soil and Health," by O. E. Fink and Russell Lord)

Soil is the eternal treasury of mankind. It is the most familiar and yet the most mysterious stuff on earth. If we as a people were as interested in soil as we are in motor dynamics, much less of our country would be surfaced with soil run-down or abandoned.

Erosion is the most damaging form of soil depletion. But plants, working quietly, also take life out of the soil. And if those plants are shipped away, or walked, or trucked away in the form of livestock or troops, then that much life is taken from a given place on earth, removed elsewhere; and to that extent the soil and the life it supports are weakened.

It is a grim fact, but "cannon and plants eat the same fodder," as the War Industries Board announced to American farmers seeking larger allocations of fertilizer during the First World War. In many ways, war hastens soil depletion and heightens the difficulties of soil replenishment. Ground-line post-war problems, this time, are going to be terrific. And yet, in the light of new techniques and developing knowledge, these problems do not seem to lie beyond hope of solution. The approach, it would seem, requires a closer knowledge of real values, and a new kind of national bookkeeping, which may lead us to a new kind of international trade.

Here in the United States we seem at last to have come to a time of maturity in our national life when instead of holding soil "dirt cheap" we are learning to think about it with anxiety, with respect, and even with the reverence that men accord, in patriotic song and utterance, their native land. The contemptuous indifference with which, in our national childhood, we manhandled our great gift of soil is passing. But we still have a great deal to learn.

Take a clean apple from the tree, wipe it, and stand it in the sun. Immediately that apple begins to die and yet, in a way mysterious beyond expression, to prepare in multitudinous forms to come to life again. You place it in the sunshine and before you can move your hand away the change has started. At least two things have started that give some idea of what soil is. First, on the invisible film of hygroscopic moisture which envelopes the skin of the apple an invisible layer of dust gathers, a layer of dust infinitely thin—"dirt," we call it profanely, but with minerals and bacteria in it, the very stuff of life. And at the same time, imperceptibly but surely, the organic matters in that apple will have started to rot. Whether you eat that apple or not, it is going the way of all flesh, back to the earth again; and once in the earth it will play a part in bringing forth new life.

And so, in a large way, it is with this much greater globe than an apple, with our earth and the changing face of earth as a whole; of our earth, with its exceedingly thin film of rotting rock and water and air and micro-organisms and major organisms, notably man. Soil offers man and his evolving races and civilizations a thin and shifting habitation at best. We must come to terms of careful culture—or agriculture—if we are to remain a perpetuating people, well-provisioned and strong.

A permanent agriculture pays back to the soil, on the spot, as much fertility as is drawn from the soil, or more. Few farmers have been doing that on American soil; and it is harder to do so now, with a global war blazing at our resources, than it has ever been before.

Even so, our chances of coming through this war and the postwar reconstruction are brighter at this time than they were in World War I. We know more about soils than we did then and, even more important, we care more. By better farming practices widely spread through such agencies as the Soil Conservation Service and the State extension services, we may vastly reduce the waste of soil and minerals by erosion. That, in a considerable measure, is being done. But it would be a sanguine guess to say that the pressure of sustained prices and greatly increased production quotas will be offset by these improved practices, or that our erosional losses will diminish even as our farm yield increases.

The new practices have spread very widely, however, in the past 10 years or so; and this may happen. In any event, we know that the shameful bleeding and blasting of soil that marked our part in provisioning World War I will not be repeated heedlessly and in toto. The essential thing, this time, is that we know what we are doing, and do it as intelligently and as carefully as we can.

Now and in the years to come we shall need to practice a new kind of accounting in dealing with the earth. We are learning. Remarkably little disturbance arose in either governmental or financial circles when news of the sinking of a shipload of gold, outward bound, was recently made public. If shipments of the high-analysis phosphates we are sending in quantity from our TVA area to revive the besieged and overdriven soil of England were to be sunk, such loss, in the light of current needs and values, would be far more serious. Gold in the utilitarian sense, might have filled some teeth that needed filling. But these phosphates, grown into crops, will help fill stomachs. They will help build sounder teeth, better bones, stronger muscles, stouter hearts, and increasing strength of mind and purpose among all who eat of the crops of England. This, at present, includes quite a few Americans. Viewed thus, our lend-lease transactions in high-powered nutrients with England and others of our allies becomes a vital form of international exchange.

HUSBANDING FEED RESOURCES VITAL TO WAR PRODUCTION

By WALDO R. FRANDSEN

PART OF THE SOLUTION of the conservation and livestock production problems in southern Idaho appears to be found in better feeding practices in the winter feed lots and on the ranches.

A ranch planning analysis of the Thomson Brothers sheep ranch in the Mayfield Soil Conservation District recently revealed some interesting information regarding the actual amount of hay that might be saved by avoiding the wasteful local practice of scattering it around in feedlots.

Tables prepared in cooperation with the University of Idaho were used to determine the feed requirements for the sheep. After making necessary allowances for 150-pound crossbred ewes rather than the 120-pound ewes on which the data were based, and for second grade hay instead of first grade hay, the recommended daily hay allowance was computed to be about 6 pounds per head. At this rate of feeding, the 4,100 ewes carried on this ranch would require approximately 1,435 tons of alfalfa hay for the winter feeding period. The cooperator actually purchased and fed some 1,600 tons of alfalfa hay during the previous winter. An inspection of the feedlots led to the conclusion that at least 165 tons of hay had been trampled into the manure and wasted. The difference of 165 tons of hay at last year's price of $15 per ton represents an additional and unnecessary outlay of $2,475.

Aside from this substantial monetary loss, the poor feeding practices were also responsible for destructive grazing on surrounding range. A year ago because of the long, severe winter and the high prices of feed, ranchers in this locality requested the Grazing Service to open the grazing season on March 15—much earlier than usual. Cheat and Sandberg bluegrass, the grasses which furnish the bulk of the spring forage on these sheep ranges, were abnormally late in developing and were showing very little spring growth on that date. Ewes on this forage could not keep up milk production and lambs could not make optimum growth.

The 165 tons of wasted hay, if properly fed, would have provided feed for the 4,100 ewes for 2 additional weeks. Ordinarily, these 2 weeks would mean the difference between turning the livestock out to graze too early or waiting until the range is ready to be grazed.

In going over these points with the rancher, a number of other management factors and ranch problems came into consideration. Sheepmen in the Mayfield section do not produce the hay needed for winter feed, but purchase it instead from farmers along the Snake River. Hay is sold by measurement in the stack. Since overmature hay usually means greater bulk and results in greater tonnage measurement, the farmers raising the hay pay more attention to quantity than to quality. In many instances the large amount of ripe seed of cheat found in this overmature hay has caused blindness to sheep; this is because the animals, forced to eat from feed racks, catch the seed falling from the disturbed hay in the wool around their eyes. There is, therefore, considerable opposition to feeding sheep from feed racks, ranchers preferring to waste the hay by open feeding on the ground.

Chopping the hay would eliminate wastage of feed and reduce the hazard of injury. Although a few ranchers along the Snake River are reported to be successfully feeding chopped hay, thus saving as high as 35 percent in amount of feed used, the practice is not general.

An acute phosphorus deficiency has also been found in this locality. This may be due, in part, to wastage of fertilizer. In at least one instance sheep manure has been pushed from the feed lots into the Snake River rather than spread on the hay lands. Proper spreading of sheep manure, together with annual applications of superphosphate or treble superphosphate, has been recommended to increase the yield of alfalfa hay and improve its quality.

The practices described here are significant because they suggest means by which conservation

EDITOR'S NOTE.—The author is zone technician, Pacific Region, Soil Conservation Service, Portland, Oreg.

The productivity of such pastures as that shown in the foreground can be increased materially by better grass mixtures, mowing of weeds, and improved irrigation. Such practices will produce more feed over a longer period and thus relieve the surrounding range, which is frequently overgrazed.

of forage resources will increase the production of livestock on privately and federally owned ranges in the Mayfield district. It might be concluded that proper fertilization and shorter rotations of alfalfa lands with suitable grasses seeded with the alfalfa, would also help to solve many of the conservation and land use problems. Perennial grasses seeded with the alfalfa, together with shorter rotations, would largely eliminate the hazard of injury from cheat and remove the objection to feeding it in feed racks. Feeding good quality hay in feed racks would permit an appreciable saving in hay itself. Eliminating the wastage of hay would result in ample feed until the range is ready to be grazed in the spring. Shortening the spring grazing period through longer feeding would considerably decrease the pressure on the range forage, and permit adoption of management practices that would facilitate a maximum rate of range recovery. A higher percentage lamb crop and increased weight of lambs at marketing time could be expected.

The solutions suggested do not involve an increase in hay acreage, but rather the elimination of wasteful production and feeding practices.

Planning technicians of the Soil Conservation Service can go far in assisting both farmers and sheepmen with problems of this kind, and thus not only help to conserve the forage resources but increase the production of livestock vitally needed for war.

(Continued from page 58)

shortage, and they're also increasing the fertility of our land, since we use the wheat stubble as a poultry range for several months of the year.

All of this—conservation of soil, water, labor, and fuel through contour farming, increased beef production through better range practices, growing turkeys to make the best use of available feed—add up to Dad's definition of conservation farming.

AB HAS THE RIGHT IDEA

By KENNETH E. BRADSHAW

Ab Gubler inspects a stalk of orchard grass, one of the best species for hay and pasture in the White Pine Soil Conservation District.

AB GUBLER stretched face downward on the edge of the irrigation ditch, took a big drink of water and came up panting.

"Water's so scarce here I hate to drink out of my own ditch," he grinned, "but I'm sure thirsty."

We jumped the ditch and started across his planted hay meadow. The field had been sown to grasses and clovers in July 1941, and now was producing hay and pasture where alfalfa could not grow. Here was a vivid example of increased production—the kind we now need so badly to help feed and clothe our fighting men and their comrades under other flags.

"I wish you could have seen these 5 acres last year just before we cut them," he said. "Reed canary grass and timothy stood higher than my head—they were up between 5 and 6 feet. Meadow fescue and orchard grass were about 5 feet high, and the redtop was up about 2½ feet. There was a good growth of mammoth red and alsike clovers, besides."

Considering the fact that Mr. Gubler's ranch is situated in the White Pine Soil Conservation District in eastern Nevada, where growing conditions are hardly ideal, the figures on the growth of his seeded pasture plants were quite surprising.

I could see that the seeded species had not yet made a heavy sod, so I asked him about the yield.

"Never figured it out exactly," he replied. "But I do know that it was so thick I could hardly run the rake through it. Let's see—I got some 360 bales, and they'd go between 80 and 90 pounds each. I think an 85-pound average would hit it pretty close. That was on 5 acres, less a piece for the lane . . ."

We did some quick calculating.

"Over 3 tons to the acre," he concluded. "That's about what I thought it would run."

Three tons to the acre is good for the White River Valley. Short growing seasons, inadequate water, alkali, and other factors normally keep yields down. The many limitations preventing maximum crop production provide the basis for a broad program being carried out by the Soil Conservation Service in cooperation with farmers and ranchers.

To gain the complete picture of production, grazing of aftermath also must be considered. During the first year the field was grazed a bit, but the stock were herded away to the adjacent alfalfa aftermath

EDITOR'S NOTE.—The author is district range conservationist, White Pine Soil Conservation District, Ely, Nev.

whenever they drifted to the new seeding. An electric fence to protect it could not be provided until the next year.

"I held them off," he explained, "because the ground there is pretty wet. Their feet would have cut right through and tramped out the tender seedlings. Those little plants need protection."

Last year, after cutting the big hay crop, Ab let the aftermath grow up to about 18 inches and then started pasturing it. He had 10 head of milk cows on it for a month straight, which makes the neat figure of better than two animal-unit-months an acre. Alfalfa aftermath in this country, unless quite heavy (or overused), yields only about one animal-unit-month to the acre.

Ab certainly has the right idea when it comes to increasing production, now so vitally important because of war demands for farm products, by seeding grasses and legumes which are best suited to the class of land that is to be cropped. His meadow is on a piece of poorly drained, alkaline bottom land. He tried planting alfalfa on it first, but the site was too wet. It came up nicely, but was completely killed out the following spring. It was then that

Ab Gubler surveys his 2-year-old meadow of orchard grass, meadow fescue, smooth brome, timothy, Reed canary grass, red clover, and alsike clover. Yield last year was 3 tons of hay and 2 animal-unit months of pasturage from each 5 acres in the field.

he decided to try out the grass-clover combination. He put the seed on "plenty thick"—about 25 pounds to the acre—and came through with a stand that was admired by everyone who saw it.

This spring (1943), growing conditions were far less favorable than they were last year. As a result, his grasses were checked and headed out prematurely. The clovers did not withstand the cold of last winter very well, and it probably will be desirable to reseed some more alsike. On the other hand, alfalfa stands were frozen badly by late frosts, so the grass hay still is expected to exceed the average alfalfa yields.

Ab's grass plantings have not been restricted to the one described. Last fall, he put orchard grass, smooth brome, redtop, timothy, and red clover on an adjacent field. It came up well, but likewise suffered from the poor growing weather this spring. But he is not discouraged, and has high hopes for the seeding.

"Grass is funny stuff," he said. "You don't think you have anything the first year, but it will come through."

His 4-acre piece of smooth brome, put in on a plot of higher ground in June 1942, is another successful seeding—one from which he planned to harvest seed this year. It was this seeding which taught him the hazard of using too heavy a nurse crop. The brome made a good crop, but this was his opinion:

"I used 100 pounds per acre of barley, but I won't ever do that again. I'll use 50 pounds—cut it in half. A full crop takes the moisture away and shades the grass too much. And cutting the barley, hauling a combine over the field, is a detriment to the grass when it is so young."

Ab has some ideas on the advantages of grass hay as a feed also. He maintains that calving heifers often will produce too large calves when fed straight alfalfa hay, and he has lost many calves, and some heifers, too, on straight alfalfa. Feeding grass hay will eliminate that trouble, resulting in the saving of many dollars for the farmer and increasing the milk and meat output for the national war effort.

The existing alfalfa fields on Ab Gubler's ranch are going to be replanted to hay after they are broken up in the crop rotation, and the hay will include grasses as well as alfalfa.

"I've tried alfalfa on all this," he explained, taking in the subirrigated croplands with a broad sweep of his arm, "but I'm going to put it into grasses. That higher land up there I'll put into grass and alfalfa. The alfalfa may go out, but once you've got grass, you've got it permanently. It makes better pasture, too, with grasses mixed in. A cow likes a mixture of feed just like a man."

Ab is one farmer who has seen the advantages of grass seedings, and feels confident that he can fit them into his land and livestock pattern to more nearly attain maximum production. He, however, is just one of many who have been experimenting with grasses and clovers in this part of the country. Such experiments have been followed too often by discouragement, because results did not meet expectations.

There is noticeable now a change in results and a change in attitude. With the gradual gathering of

information by the hard way of trial and error, an accumulation of facts and figures is pointing out the species that may be used on different sites, the proper rates of seeding, the time and method of seeding, and how to manage the pastures and hayfields for maximum prolonged production.

The White Pine Soil Conservation District is swinging into step beside the farmers. It is helping them with their seeding problems, checking site conditions, introducing new species, and recommending the best methods of seeding. The Soil Conservation Service is furnishing technical assistance in this work. For established pastures there are approved practices to be encouraged, and special problems in management to be studied and solved. The job ahead will be big, but it will likewise be important. Good pastures and hayfields will supplement alfalfa and replace inferior or worthless brush and native pastures. Increased feed will mean increased production of milk and meat and other products for the war period and later, as well as more income for the farmers.

PASTURING FALL PLANTED GRAINS

(Continued from page 52)

real effort. It is perhaps not generally realized that sufficient return can be obtained from grazing fall grains to pay for the seeding and also obtain a nice profit even though the crops are not to be harvested for grain. In such cases grazing can be carried on right up to the time the land is to be prepared for seeding spring or summer crops.

In recent years, disease-resistant strains of winter grains have been developed by the Bureau of Plant Industry and State experiment stations, and are quite widely distributed. All possible effort should be made to encourage more extensive use of these improved varieties because undoubtedly more grazing can be obtained from them. Information concerning them can be obtained from the several State experiment stations or the Bureau of Plant Industry.

The Soil Conservation Service has a common objective with other Federal and State agencies in pushing the program for seeding more fall grains for grazing. A great deal of emphasis should be placed on this program because it will lighten the load on concentrate feeds. Most of you are aware of the shortage that existed this past winter in cottonseed meal, soybean meal, and other concentrates, and there is no reason to expect that the situation will be improved this coming winter. The needed protein for livestock can be obtained to a large extent from the winter pasture. There is perhaps no one thing that we can do that will have as great and immediate effect on the production program as will a campaign of seeding fall grain.

Winter wheat following corn in Hunterdon (township), N. J.—a common practice in many localities in the Northeastern States. Such a seeding will furnish excellent fall and winter grazing.

ON THEIR WAY

The "fourth dimension" in farm planning is discussed by Harry H. Gardner in an article to be published soon in this periodical. In the meanwhile, make a guess as to what this "fourth dimension" is.

Important doings at this year's soil-nutrition-human health session at Tar Hollow will be reported by word and picture in next month's issue of Soil Conservation. Men and women distinguished in varied scientific fields came from near and far to exchange their views. Tar Hollow is growing in fame.

Irrigation is on tap for further consideration. An article now in the mill tells of important accomplishments in New Mexico.

HE GROWS PEACHES IN THE TROPICS

BY G. L. CRAWFORD

OFTEN IT PAYS to do the unusual thing in an unusual way. This is what Declasse Moise thought after he went broke raising sugarcane in Haiti in 1935. He migrated from the low level sugar lands of Haiti to 4 acres on a rocky knoll 4,500 feet above sea level near Kenskoff, a mountain summer home area about 12 miles from Port-au-Prince. He contracted to pay $65 an acre or a total of $260 for his farm and, to show his faith, he made a down payment at the outset of $12, all of the money he possessed.

Moise terraced his land, raked the rocks to the outer edge of the terrace, dug and blasted out holes in the rocks, carried in rich soil by hand, and planted peaches, plums, figs, cauliflowers, and artichokes. He planted leguminous crops to supply as much nitrogen as possible.

Peach trees are the chief source of revenue. Moise obtained the stock from Florida. A pound of his peaches brings 20 cents and consists of from two to four of the fruits. He does not have frost at the 4,500-foot elevation, but he does have a cold period which causes the deciduous trees to go through a dormant period. His crops thrive in that climate and altitude. In fact, he has a reputation in Port-au-Prince and among tourists as being a producer of fine-quality vegetables as well as fruits not commonly grown in the Tropics. He sells all that he can grow. In 1941 he felt the need of additional land and rented 1½ acres on which to grow onions for the local market.

This enterprising farmer sold $4,000 worth of produce in 1940. All of his work was done by hired labor and with hand tools. His expenses for that year were approximately $1,500.

Declasse Moise and his home, paid for by growing peaches in the mountains near Kenskoff, Haiti.

In 1941 he probably increased his income by some $1,000 from the production of onions on the additional land.

In learning how to grow rare products for the tropics, Moise is not neglecting one of the main opportunities on the farm—that is, living in comfort and taking advantage of local material to contribute toward that end. His beautiful home is built from local stone and is nicely equipped with furniture made from local hardwood. He is a sound businessman, has his office in his home, keeps careful records. The agricultural officials of the Haitian Government say that Moise often consults them on problems arising in connection with his farm.

The lesson we can learn from this farmer in the mountains of Haiti is to look around us as he did and develop the unusual things where there is a demand for them and to do it in a systematic and intelligent way. Many of us cannot only increase our net earnings but at the same time serve our community and country, as well.

HOME ORCHARDS THAT NEVER FAIL

By HOMER G. TOWNS

THE NATIVE PLUM thicket and wild blackberry patch happen more by accident than by deliberation. If they are permitted to grow unmolested, they seldom fail to produce food. Most of these "native orchards" started voluntarily in an isolated corner of a cultivated field, in a stony outcrop in the middle of a pasture, along the bank of a stream that runs through a farm, or along the border between a woodlot and a cultivated field.

For many years such "odd" pieces of farm land have been called waste areas. In too many instances they have been wasted indeed, because a desirable type of vegetation has not been permitted to become established on them.

Today when more food means the difference between life and death for millions of people and when food actually means so much in the battle for freedom, there should be no such thing as idle land on farms and ranches. Every plot should be producing maximum yields of needed and adaptable crops.

EDITOR'S NOTE.—The author is regional biologist, Soil Conservation Service, Fort Worth, Tex.

Mrs. Scott smilingly appraises some of the 47 quarts of wild blackberries she canned this year.

Stream banks, field borders, small isolated areas, marshes, and rough, rocky, or badly eroded areas total approximately 33,000,000 acres on the farms and ranches of this country. As long as such lands are regarded as waste patches, they probably will remain essentially that. Instead of receiving management that would offer some possibility of an income, waste lands are usually abused to such an extent that they continue to deteriorate.

Native wild fruits and berries are well adapted to many so-called waste lands. Where such sites are properly protected from fire, farmers have been able to harvest a profitable crop of fruit every year for many years.

Mrs. R. S. Eason, Smith County, Tex., said recently, "We have canned at least 150 quarts of berries every year for 30 years from blackberries growing along the branch that goes through our pasture. And we have never failed to get enough wild grapes right here on the place to make all the jelly we need."

Ruth Causey, home demonstration agent, Rusk County, Tex., said, "Nearly all the families that I work with in this county can a lot of the wild fruits and berries every year. At least one-half of the fruit used by these families is supplied this way. Uncontrolled fires seem to be the only thing sometimes preventing the blackberries from making a crop."

P. R. Johnson, director of the experiment station at Tyler, Tex., pointed out that blackberries, dewberries, huckleberries, and some species of wild grapes seem to make a crop every year. Wild plums will make a crop at least 3 or 4 years out of 5.

A few simple management measures—protection from fire and from too much trampling by livestock, and the removal of tree species about once every 5 years—would convert hundreds of acres unsuited to cultivated crops, pasture, or woodlands into "home orchards" that would seldom, if ever, fail to produce

(Continued on page 72)

For REFERENCE

Compiled by ETTA G. ROGERS, Publications Unit

Field offices should submit requests on Form SCS–37, in accordance with the instructions on the reverse side of the form. Others should address the office of issue.

SOIL CONSERVATION SERVICE

Furs from Farmlands. Soil Conservation Service. (Prepared for use by Technicians of the Soil Conservation Service. Not for General Distribution or Publication.) June 1943. Processed.

OFFICE OF INFORMATION
U. S. DEPARTMENT OF AGRICULTURE

Corn Futures Statistics: January 1940–September 1942. Food Distribution Administration. June 1943.

Diseases of Dent Corn in the United States. Circular No. 674. Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture. July 1943. 10¢.[1]

Estimated Volume of Motor Freight for Selected Agricultural Commodities, 1941 and 1942. Bureau of Agricultural Economics. July 1943. Processed.

Experiments with Oils and Lime-Sulfur for the Control of the San Jose Scale on Peach Trees in the South. Technical Bulletin No. 852. Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, U. S. Department of Agriculture. May 1943. 5¢.[1]

Grass Seed Production. AWI–43. Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture. June 1943.

Safety for the U. S. Crop Corps. AWI–42. U. S. Department of Agriculture in collaboration with the U. S. Department of Labor, U. S. Office of Education, and the National Safety Council. May 1943.

Sugar-Beet Seed Production in Southern Utah, with Special Reference to Factors Affecting Yield and Reproductive Development. Technical Bulletin No. 845. Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture. June 1943. 10¢.[1]

Summer Crops for Green Manure and Soil Improvement. Farmers' Bulletin No. 1750. Bureau of Plant Industry, Soils, and Agricultural Engineering. Slightly revised June 1943. 5¢.[1]

Wartime Canning of Fruits, Vegetables. AWI–41. Bureau of Human Nutrition and Home Economics, Agricultural Research Administration, U. S. Department of Agriculture. June 1943. 5¢.[1]

Wartime Feed Mixtures for Chickens. AWI–48. Bureau of Animal Industry, Agricultural Research Administration, U. S. Department of Agriculture. June 1943.

Work Performed with Principal Farm Machines. F. M. 42. Bureau of Agricultural Economics. May 1943. mm.

STATE BULLETINS

Adjustments for Greater Profits on Small Flue-Cured Tobacco Farms. Bulletin No. 387. Agricultural Experiment Station, University of Florida, Gainesville, Fla. June 1943.

Beef Cattle Management. Circular No. 454. Agricultural Experiment Station, Rutgers University, New Brunswick, N. J. February 1943.

Can Surplus Fruits and Vegetables. Bulletin No. 121. Agricultural Extension Service, University of Florida, Florida State College for Women, Tallahassee, Fla., with the cooperation of the U. S. Department of Agriculture. April 1943.

Farm Outlook for 1943. Circular No. 178. Extension Service, North Dakota Agricultural College, Fargo, N. Dak. April 1943.

Fifty-second Annual Report of the University of Wyoming Agricultural Experiment Station, 1941–42. University of Wyoming, Laramie, Wyo.

Home Storage of Fresh Fruits and Vegetables. Circular No. 460. Agricultural Experiment Station, Rutgers University, New Brunswick, N. J. June 1943.

Meeting Wartime Beef Production Goals. Circular No. C–112. Agricultural Experiment Station, Oklahoma A. and M. College, Stillwater, Okla. May 1943.

Minor Elements Stimulate Pasture Plants: A Preliminary Report. Bulletin No. 384. Agricultural Experiment Station, University of Florida, Gainesville, Fla. March 1943.

Muck Soil Management for Sugar Beet Production. Circular Bulletin No. 187. Agricultural Experiment Station, Michigan State College, East Lansing, Mich. April 1943.

Notes on Livestock Poisoning in Connecticut. Bulletin No. 470. Agricultural Experiment Station, New Haven, Conn. April 1943.

Ohio Corn Performance Tests and Recommendations, 1942. Special Circular No. 66. Agricultural Experiment Station, Wooster, Ohio, with the cooperation of the Bureau of Plant Industry, Agricultural Research Administration, U. S. Department of Agriculture and the Agricultural Extension Service, The Ohio State University, Columbus, Ohio. February 1943.

Oregon's Forage Seed Crops, 1941–42: Alfalfa, Clover, Grass, Pea, and Vetch Seeds. Bulletin No. 613. Extension Service, Oregon State College, Corvallis, Oreg., with the cooperation of the U. S. Department of Agriculture. January 1943.

Peanut Production Costs and Income in Oklahoma in 1942. Bulletin No. B–267. Agricultural Experiment Station, Oklahoma A. and M. College, Stillwater, Okla. May 1943.

Peanuts for Oil: A War Crop for Farmers in Hill Areas of Mississippi. Bulletin No. 376. Agricultural Experiment Station, Mississippi State College, State College, Miss. March 1943.

Planning the Farm Business in South Central Kansas. Bulletin No. 312. Agricultural Experiment Station, Kansas State College, Manhattan, Kans. March 1943.

Physical and Chemical Properties of Soil Profiles of the Scott, Fillmore, Butler, Crete, and Hastings Series. Bulletin No. 126. Agricultural Experiment Station, University of Nebraska, Lincoln, Nebr. June 1942.

Plow Adjustment and Operation. Circular No. 232. Agricultural Experiment Station, University of Missouri, Columbia, Mo. May 1942.

Potato Fertilizer-Rotation Studies on Aroostook Farm, 1927–41. Bulletin No. 414. Agricultural Experiment Station, University of Maine, Orono, Maine, with the cooperation of the Bureau of Plant Industry, U. S. Department of Agriculture. January 1943.

Potato Protection for Small Acreages. Bulletin No. 181. Extension Division, Michigan State College, East Lansing, Mich., with the cooperation of the U. S. Department of Agriculture. April 1943.

Preservation of Food Products by Freezing. Circular No. 461. Agricultural Experiment Station, Rutgers University, New Brunswick, N. J. June 1943.

Starting Vegetable Plants. Bulletin No. 475. Agricultural Experiment Station, Colorado State College, Fort Collins, Colo. February 1943.

Suggestions for Reducing Crop Damage by Wildlife. Circular No. 148. Agricultural Experiment Station, Oregon State College, Corvallis, Oreg., with the cooperation of the United States Fish and Wildlife Service. April 1943.

Varieties of Farm Crops for Montana, 1943. Circular No. 171. Agricultural Experiment Station, Montana State College, Bozeman, Mont. March 1943.

War-Time Feeds: Use Them Wisely and Avoid Necessity for Rationing. Circular No. 69. Agricultural Experiment Station, University of Florida, Gainesville, Fla., with the cooperation of the U. S. Department of Agriculture. May 1943.

[1] From Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

HOME ORCHARDS THAT NEVER FAIL

(*Continued from page 70*)

enough fruit to supply most of the home needs for a lot of farm families.

Simple management practices applied to "berry patches" and "plum thickets" that are already present on farms and ranches throughout the country undoubtedly would result in a material increase in essential food.

Present acreages of "home orchards" could be increased severalfold if farmers would establish "plum thickets" and "berry patches" and other fruit-producing plants wherever they can be made to thrive on land not otherwise in the revenue-producing class. Many sites which could be converted into "home orchards" are now utterly void of vegetation or are supporting a type of growth that fails to protect the land adequately from erosion. In many instances, erosion and run-off from these areas are damaging adjacent cultivated land by contributing to floods and otherwise reducing the value of good bottomlands.

Irrespective of the harvest value of "home orchards," they admittedly offer a type of vegetation which on many critical sites are often the best means of controlling erosion. Used properly, the "orchards" also will afford the most desirable kind of wildlife habitats.

Before we can achieve a program of complete land use, the term "waste land" must be made obsolete.

A. P. Scott takes a look at the ripening berries on his place.

Why not grow a valuable fruit instead of obnoxious weeds along some of the fences?

REVIEWS

FISH FOR FOOD FROM FARM PONDS. By Verne E. Davison and J. A. Johnson, United States Department of Agriculture Farmers' Bulletin No. 1938, 22 pp. illus. May, 1943.

A 1-acre farm pond can yield 350 to 400 pounds of palatable pan-sized fish each year, we learn from this new bulletin by two Soil Conservation Service biologists. Practical instructions for stocking, fertilizing, and harvesting pond fish are simply stated in the publication and directions for building a small pond are also outlined. There is a brief discussion of how to protect the pond from sedimentation through the establishment of erosion-control practices on the pond watershed. The management principles discussed, although based upon experience in the Southern States, are, with local adaptations, applicable in many other parts of the country. Neatly illustrated, the bulletin represents the Department's first contribution to this method of supplementing the farm diet by a home-produced source of vitamin-rich food at a very reasonable cost.

U. S. GOVERNMENT PRINTING OFFICE: 1943